

ABSTRACT OF THE DISCLOSURE

E1
A cable, in particular a cable for electric power transmission or distribution, having an inner layer including a self-repairing material with a predetermined cohesiveness and a controlled flowability, so as to reestablish, upon creation of a discontinuity in at least one of the cable coating layers, the continuity in the coating. The discontinuity in the coating can be caused by mechanical abuses of various types, for example, accidental impact with cutting tools. Infiltration of moisture and generation of leakage currents, leading to a rapid corrosion of the conductor, are avoided in this way.

REMARKS

Applicants submit this Amendment, accompanied by an Appendix to Amendment, a Supplemental Information Disclosure Statement Under 37 C.F.R. § 1.97(c) ("SIDS"), and a Petition for Extension of Time, in response to the Office Action mailed January 15, 2003.

In this Amendment, Applicants amend the abstract substantially as recommended by the Examiner.

Before entry of this Amendment, claims 55-100 were pending in this application. After entry of this Amendment, claims 55-100 remain pending in this application.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to the abstract. No new matter was introduced.

In the Office Action, the Examiner objected to the abstract; rejected claims 55-69 and 74-100 under 35 U.S.C. § 112, ¶ 1; allowed claims 70-73; and stated that claims 55-69 and 74-100 would be allowable if Applicants overcame the rejections under 35 U.S.C. § 112, ¶ 1.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Applicants respectfully traverse the Examiner's rejections.

Domestic Priority

Applicants note that the Preliminary Amendment filed January 29, 2002, adds a paragraph immediately after the title stating, inter alia, "[t]his application is a continuation of U.S. Patent Application Serial No. 09/971,766, filed October 9, 2001, which is a continuation of U.S. Patent Application Serial No. 09/261,505, filed March 3, 1999, the contents of both of which are relied upon and incorporated herein by reference"

Applicants request the Examiner acknowledge Applicants' claim for domestic priority in the next paper mailed from the USPTO.

Claims Allowed

Applicants gratefully acknowledge the Examiner's statement that claims 70-73 are allowed.

Applicants note that the Examiner's statement of reasons for allowance indicates that claims 70-73 are copied from U.S. Patent No. 6,184,473 ("the '473 patent") and U.S. Patent No. 6,359,231 ("the '231 patent"). Applicants point out that claims 70-72 are copied identically¹ from the '473 patent, and claim 73 is copied substantially, differing from claim 70 (and claim 16 of the '473 patent) only so as to improve the clarity of the claim language, but none are copied from the '231 patent.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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¹ Two typographical errors in claims 16 and 17 of the '473 patent are corrected in respective new claims 70 and 71: (1) "polysiobutene" in claim 16 is corrected to recite "polyisobutene" in claim 70; and (2) "filing" in claim 17 is corrected to recite "filling" in claim 71.

Claims That Would Be Allowable

Applicants gratefully acknowledge the Examiner's statement that claims 55-69 and 74-100 would be allowable.

Applicants note that the Examiner indicates that claims 55-69 and 74-100 are copied from the '473 patent and the '231 patent. Applicants point out that claims 55-69 are copied identically from the '473 patent. Additionally, claims 74-99 are copied identically² from the '231 patent, and claim 100 is copied substantially, differing from claim 97 (and claim 24 of the '231 patent) only so as to improve the clarity of the claim language.

Claim Rejections Under 35 U.S.C. § 112, ¶ 1

The rejections under 35 U.S.C. § 112, ¶ 1, are described in the Office Action as related to the enablement requirement. As discussed with Examiner Mayo during the interview on March 11, 2003, Applicants' representatives believe these rejections are more properly characterized as related to the written description requirement of 35 U.S.C. § 112, ¶ 1. The discussion below proceeds on that basis.

The Examiner rejected various claims on the grounds that Applicants' disclosure does not enable (support) one of four recitations: "flowable at about 25° C," "a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C," "said material is substantially free of solvents and oils," and "said material is made from low molecular weight copolymers of an isomer." Applicants discuss each of these recitations in turn.

² Two typographical errors in claims 11 and 25 of the '231 patent are corrected in respective new claims 84 and 98: (1) "migrates" in claim 11 is corrected to recite "mitigates" in claim 84; and (2) "filing" in claim 25 is corrected to recite "filling" in claim 98.

Flowable at about 25° C: In the Office Action, the Examiner stated that “[t]he copied claim limitations ‘ . . . a material being flowable at about 25°C’ [are] not enabled by the [applicants’] specification Specifically, the [applicants’] specification specifies that ‘the sealing material is flowable at ambient temperature’ doesn’t enable the specific claim limitation of the materials being flowable at about 25°C.” As a result, the Examiner rejected independent claims 55, 59, 74, 84, 97, 99, and 100 under 35 U.S.C. § 112, ¶ 1. Applicants respectfully traverse this rejection for several reasons.

As an initial matter, Applicants note that Section 112, ¶ 1, does not require the specification to contain the identical words of the claim. In re Lukach, 169 USPQ 795, 796 (CCPA 1971) (“the invention claimed does not have to be described in *ipsis verbis* in order to satisfy the description requirement of § 112”). Instead, the question is whether persons skilled in the art would conclude that applicants were in possession of the invention as claimed. Vas-Cath Inc. v. Mahurkar, 935 F.3d 1555, 1563-64 (Fed. Cir. 1991); see MPEP 2163.I.B.

Applicants’ disclosure plainly evidences that they had possession of a material flowable at “about 25° C” (i.e., about 77° F) because it states that the self-repairing material must have controlled flowability “not only at ambient temperature but also at higher temperatures” (p. 8/11. 4-7). One skilled in the art would readily understand that being flowable at ambient temperature encompasses being “flowable at about 25° C.” For instance, as indicated in Exhibit A to Applicants’ Second Supplemental Preliminary Amendment and Request That an Interference Be Declared (“Second SPA”) filed January 29, 2002, a standard chemical dictionary defines the term “room temperature” as a temperature in a range from 20° C to 25° C and as a term literally encompassed by the term “ambient temperature.” Hawley’s Condensed Chemical

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER^{LLP}

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Dictionary 973 (13th ed. 1997). Applicants' representatives discussed this point with the Examiner during a personal interview on March 11, 2003.

Moreover, to the extent the Examiner maintains that Applicants' disclosure of flowability at "ambient temperature" is insufficient because it encompasses a range of temperatures, the claim limitation "flowable at about 25° C" also encompasses a range of at least some of the same temperatures. This conclusion flows directly from the ordinary meaning of the claim word "about" and the specifications of the '473 and '231 patents. In re Spina, 24 USPQ2d 1142, 1144 (Fed. Cir. 1992) ("When interpretation is required of a claim that is copied for interference purposes, the copied claim is viewed in the context of the patent from which it was copied."). Indeed, the '473 and '231 patents describe the self-sealing material as "flowable at a temperature at least as low as 25° C" (the '473 patent, Abstract; the '231 patent, Abstract) (emphasis added), "readily pumped at temperatures at least as low as 25° C" (the '473 patent, c. 6/l. 21; the '231 patent, c. 6/l. 26) (emphasis added), and "flowable at about 25° C" (the '473 patent, claims 1 and 5; the '231 patent, claims 1, 11, 24, and 26) (emphasis added). Applicants' representatives discussed this point with the Examiner during the personal interview on March 11, 2003.

One skilled in the art would also view Applicants' invention as including flowability "at about 25° C" because the '473 and '231 patents do not describe any distinction between flowability "at about 25° C" and flowability at ambient temperature in terms of the operability of the claimed material or of achieving the desired self-sealing result. In re Wertheim, 191 USPQ 90, 98 (CCPA 1976) (claims to narrow range supported by disclosure of broad range when no distinction, in terms of operability or achieving desired result, between the ranges). To the contrary, the '473 and '231 patents define the flowability of their self-sealing material using the

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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very standard disclosed in the present application: its ability to flow at ambient temperature.

Those patents state: “[t]he material causes the cable to be self-sealing, i.e., it will flow, at ambient temperature” (the ’473 patent, c. 6/ll. 42-43; the ’231 patent, c. 6/ll. 46-47) (emphasis added.)

Indeed, the ’473 and ’231 patents effectively equate flowability at about 25° C with flowability at ambient temperature in discussing the self-sealing properties of the material. For example, the claims recite “a material flowable at about 25° C. between the conductor and the layer of insulation which provides self-sealing properties to the cable” (the ’473 patent, claim 1; the ’231 patent, claim 1) (emphases added), while the specifications state that “[t]he material causes the cable to be self-sealing, i.e., it will flow, at ambient temperature” (the ’473 patent, c. 6/ll. 42-43; the ’231 patent, c. 6/ll. 46-47) (emphases added). These statements plainly show the lack of distinction between flowability at ambient temperature and flowability “at about 25° C” in the ’473 and ’231 patents. See In re Spina, 24 USPQ2d at 1144 (interpretation of copied claim is based on originating specification). Applicants’ representative discussed the disclosure of flowability at ambient temperature in the ’473 and ’231 patents with the Examiner during a telephone interview on March 19, 2003.

Thus, because the disclosure of a material flowable at ambient temperature in the present application shows that Applicants were in possession of a “material flowable at about 25° C,” Applicants’ specification provides written-description support under 35 U.S.C. § 112, ¶ 1, for independent claims 55, 59, 74, 84, 97, 99, and 100. As a result, Applicants request that the Examiner withdraw the rejection under 35 U.S.C. § 112, ¶ 1, of independent claims 55, 59, 74, 84, 97, 99, and 100, which recite a “material flowable at about 25° C.” Additionally, Applicants

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

request that the Examiner withdraw the rejection of claims 56-58, 60-69, 75-83, 85-96, and 98 under 35 U.S.C. § 112, ¶ 1, due to their direct or indirect dependency from independent claims 55, 59, 74, 84, 97, 99, or 100.

100 gram needle penetration value: In the Office Action, the Examiner stated that “[t]he copied claim limitations ‘. . . wherein the material has a 100 gram needle penetration value of greater than 100 tenths of a millimeter at 25°C’ [are] not supported by the [applicants’] specification Specifically, the [applicants’] specification specifies that ‘the sealing material may be Vistanex[®], and the [applicants attach] Exhibit E to support that the material has a 100 gram needle penetration value of greater than 100 tenths of a millimeter at 25°C, [but] the [applicants don’t] specify in the specification that the Vistanex material [] can actually be Vistanex LM or Vistanex LM-LC.” As a result, the Examiner rejected dependent claims 56, 61, 75, and 86 under 35 U.S.C. § 112, ¶ 1.

Applicants respectfully traverse because their specification does disclose an LM grade of Vistanex[®] for the self-repairing material. Specifically, Example 1 in Table 1 on page 23 of Applicants’ disclosure describes a self-repairing material that is 100 parts-by-weight (99.5%-by-weight) Vistanex[®] LM-MH (polyisobutene) and 0.5 parts-by-weight Irganox[®] (antioxidant).

Moreover, Applicants’ disclosure conveys with reasonable clarity to those skilled in the art that they were in possession of the claimed invention. In particular, not only does Example 1 in Table 1 on page 23 of Applicants’ disclosure describe a self-repairing material that is 100 parts-by-weight (99.5%-by-weight) Vistanex[®] LM-MH (polyisobutene) and 0.5 parts-by-weight Irganox[®] (antioxidant), but LM grades of Vistanex[®] were known to those skilled in the art to have “a 100 gram needle penetration value of greater than 100 tenths of a millimeter at

25° C.” Indeed, this knowledge is explicitly evidenced by prior art U.S. Patent Nos. 4,703,132 (c. 5/11. 10-21), 5,010,209 (c. 4/11. 34-45), and 5,049,593 (c. 5/11. 15-26) (all of which were assigned to the assignee of the present application and were submitted in an Information Disclosure Statement Under 37 C.F.R. § 1.97(b) filed January 29, 2002). Consequently, Applicants’ disclosure provides adequate support for the claimed subject matter.

Interestingly, the only support in the ’473 patent (c. 6/11. 26-34) and the ’231 patent (c. 6/11. 31-39) for the claim language reciting 100 gram needle penetration values greater than 100 tenths of a millimeter at 25° C are passages nearly identical to those in U.S. Patent No. 5,010,209. A side-by-side comparison of relevant portions of U.S. Patent No. 5,010,209 (on the left) and the ’473 patent (on the right) demonstrates the striking similarity of these disclosures:

U.S. Patent No. 5,010,209

A polymer which has been found to be particularly suitable is low molecular weight LM polyisobutylene sold . . . under the trademark VISTANEX.

The preferred base polymer of the filling compound of the invention does not have any significant Shore A hardness. A test of determining whether or not the base polymer has acceptable properties is the Penetrometer Test incorporated in ASTM D5 Penetration of Bituminous Materials. The 100 grams needle penetration value at 25° C. should be in the range from 110 to 180 tenths of a millimeter.

The ’473 Patent

A polymer which has been found to be particularly suitable is polyisobutene.

The preferred polymer of the present invention has very little or no significant Shore A hardness. A test of determining whether or not the polymer has acceptable properties is the Penetrometer Test incorporated in ASTM D5 Penetration of Bituminous Materials. The 100 grams needle penetration value at 25° C. should be greater than about 100 tenths of a millimeter.

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1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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Further, as shown in Exhibit E of the Second SPA, Vistanex[®] LM-MH has needle penetration values at 25° C of 115-154 tenths of a millimeter according to test method AM-S 210.10. This test method, a copy of which is being submitted with the SIDS, is believed to be a modification of the ASTM D5 test described in the '473 and '231 patents and essentially a 100 gram needle penetration test. Indeed, the penetration values of Vistanex[®] LM-MH at 25° C of 115-154 tenths of a millimeter using test method AM-S 210.10 (as disclosed in the Vistanex[®] LM datasheet in Exhibit E of the Second SPA) appear entirely consistent with the penetration values of LM grades of Vistanex[®] in the range from 110 to 180 tenths of a millimeter at 25° C using test method ASTM D5 (as disclosed in the '473 and '231 patents). Applicants submit this provides further evidence that the disclosure of Example 1 in Table 1 on page 23 conveys with reasonable clarity to those skilled in the art that the inventor was in possession of the claimed material having a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C.

Consequently, Applicants request that the Examiner withdraw the rejection under 35 U.S.C. § 112, ¶ 1, of dependent claims 56, 61, 75, and 86, which recite "a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C." Additionally, Applicants request that the Examiner withdraw the rejection of claims 76-81, 87, and 88 under 35 U.S.C. § 112, ¶ 1, due to their direct or indirect dependency from claims 56, 61, 75, or 86.

Substantially free of solvents and oils: In the Office Action, the Examiner stated that "[t]he [applicants'] claim[] specifying that 'the material is substantially free of solvents and oils' is not enabled by the [applicants'] specification. Specifically, the [applicants'] specification specifies that 'the sealing material contains oils['] (see page 10, lines 20-35, i.e. polyisobutene

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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with minor amounts of α -olefins)." As a result, the Examiner rejected dependent claim 77 under 35 U.S.C. § 112, ¶ 1.

Applicants respectfully traverse this rejection of claim 77. While Applicants' specification does disclose some embodiments with oils, it also describes others without oils. As discussed above, Example 1 in Table 1 on page 23, for example, discloses that the material is 100 parts-by-weight Vistanex[®] LM-MH (polyisobutene) and 0.5 parts-by-weight Irganox[®] (antioxidant). Both the Vistanex[®] LM-MH and the Irganox[®] are at least substantially free of solvents and oils, and this example does not include, for example, the polybutene oil Napvis[®] DE10 present in other examples. Thus, the material in Example 1 is at least substantially free of solvents and oils. Applicants' representatives discussed this point with the Examiner during the personal interview on March 11, 2003.

Accordingly, there is written-description support in the specification for the material "being substantially free of solvents and oils." Therefore, Applicants request that the Examiner withdraw the rejection of dependent claim 77 under 35 U.S.C. § 112, ¶ 1.

Low molecular weight copolymers: In the Office Action, the Examiner stated that "[t]he [applicants'] claim[] specifying that 'the sealing material is made from low molecular weight copolymers of an isomer'[] is not enabled by the specification. Specifically, the [applicants'] specification specifies that 'the sealing material is an average molecular [weight] material['] (see page 10, lines 36-39)." As a result, the Examiner rejected dependent claim 79 under 35 U.S.C. § 112, ¶ 1.

Applicants also respectfully traverse this rejection. As discussed above, in the specification of the present application, Example 1 in Table 1 on page 23 discloses that the

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
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material is made from 100 parts-by-weight Vistanex[®] LM-MH (polyisobutene). As shown in Exhibit E (and in the document entitled "Vistanex Polyisobutylene Properties & Applications" submitted with the SIDS, a courtesy copy of which was provided to the Examiner during the personal interview on March 11, 2003), the "LM" in LM-MH stands for "low molecular weight." Thus, in the present application, the specification discloses a specific example of a material that can be made from low molecular weight copolymers of an isomer.

As a result, the specification contains written-description support for the material being "made from low molecular weight copolymers of an isomer." Therefore, Applicants request that the Examiner withdraw the rejection of claim 79 under 35 U.S.C. § 112, ¶ 1.

Summary

Applicants' specification fully supports the claim recitations "flowable at about 25° C," "a 100 gram needle penetration value greater than 100 tenths of a millimeter at 25° C," "said material is substantially free of solvents and oils," and "said material is made from low molecular weight copolymers of an isomer." Accordingly, the Examiner should allow all pending claims and recommend that an interference be declared.

If there is any fee due in connection with the filing of this Preliminary Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

By: 

Lawrence F. Galvin
Reg. No. 44,694

Dated: June 6, 2003

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

APPENDIX TO AMENDMENT

Amendments to the Abstract

Please amend the Abstract, as follows:

Amend page 39 as shown. A new, separate page 39 including the ABSTRACT OF THE DISCLOSURE is enclosed.

ABSTRACT OF THE DISCLOSURE

A cable, in particular a cable for electric power transmission or distribution, having an inner layer [comprising] including a self-repairing material with a predetermined cohesiveness and a controlled flowability, so as to [re-establish] reestablish, upon creation of a discontinuity in at least one of the cable coating layers, the continuity in the coating. The discontinuity in the coating can be caused by mechanical abuses of various types, for example, accidental impact with cutting tools. Infiltration of moisture and generation of leakage currents, leading to a rapid corrosion of the conductor, are avoided in this way [avoided].

[FIG. 1]

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com